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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/687,771	10/20/2003	Hou-Wei Lin	REAP0438USA1	9601
27765	7590	05/02/2007		
NORTH AMERICA INTELLECTUAL PROPERTY CORPORATION P.O. BOX 506 MERRIFIELD, VA 22116			EXAMINER AHN, SAM K	
			ART UNIT 2611	PAPER NUMBER
			NOTIFICATION DATE 05/02/2007	DELIVERY MODE ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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SK

## Office Action Summary

Application No.

10/687,771

Applicant(s)

LIN ET AL.

Examiner

Sam K. Ahn

Art Unit

2611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 07 March 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-9 and 11-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-9 and 11-13 is/are allowed.
- 6) ☒ Claim(s) 14-18 is/are rejected.
- 7) ☒ Claim(s) 19 and 20 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 March 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's arguments, see p.12 and 14, filed 03/07/07, with respect to the rejection(s) of claim(s) 1,7 and 10 under 102(e) and of claims 2-6,8,9 and 11-13 under 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Takatori et al. US 5,581,585.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 14-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takatori et al. US 5,581,585 (Takatori) in view of Agazzi et al. US 2003/0007581 (Agazzi, cited previously).

Regarding claim 14, Takatori teaches a feed-forward equalizer (FFE) of a communication system (see Fig.2) comprising: a multi-tap filter (22) for filtering a receiving signal (output of the first element 100), comprising: a plurality of delay elements coupled in series (100) for generating a plurality of delay signals (110) according to the receiving signal, each of the delay signals corresponding to a different delay (not a single, but different delay elements), each of the delay

signals corresponding to a middle delay among the different delays (middle delay of 100 among N delay elements); a plurality of multipliers (120, wherein one skilled in the art that the element 120 performs the function of a multiplier) for respectively multiplying the receiving signal (output of the first element 100) and the delay signals (110) by a plurality of parameters (210) and thereby generating a plurality of multiplied signals (outputs of 120), wherein at least one of the parameters remains fixed (140, note c.4, l.22) while the other parameters are adjusted to converged values (adjusted by 24) so as to accelerate the convergence of the communication system; and a summing circuit (130) for summing the multiplied signals (outputs of 120 and 140) to generate a filtered receiving signal (output of 130).

And although Takatori teaches automatic gain control (20 in Fig.2), does not explicitly teach a digital auto-gain controller (DAGC) coupled to the adaptive filter for adjusting the magnitude of the filtered receiving signal according to the parameters.

Agazzi teaches DAGC (34) in Fig.2 coupled to the output of FFE (34 coupled to 32). Hence, both Takatori and Agazzi teach a receiver receiving signals and applying FFE and AGC, wherein Agazzi further suggests that AGC is a digital AGC coupled to receive the output of FFE in order to provide signals accurately (note paragraph 0111) than PGA with analog AGC (220). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to incorporate the teaching of Agazzi in the receiver of Takatori by providing DAGC

of Agazzi coupled to the output of FFE 22 of Takatori for the purpose of provide signals accurately (note paragraph 0111).

Regarding claim 15, Takatori further teaches wherein at least two of the parameters remain fixed (see Fig.7, wherein the output of element N provides the first fixed value and output of 500 provides the second value) while the other parameters are adjusted (the rest of inputs to 120 are from 210 which are adjustable).

Regarding claim 16, Takatori further teaches all subject matter claimed, as applied to claim 15. And although Takatori does not explicitly further teach wherein two of the multipliers respectively multiply two of the delay signals by the two fixed parameters, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to implement as such. Applicant has not disclosed that such implementation provides an advantage, is used for a particular purpose or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected Applicant's invention to perform equally well with a single multiplier for output of 500, while no multiplier is needed for the element N because 140 is the value by itself, hence is a value multiplied by one. One skilled in the art would recognize that this saves the overall production cost of the system, since a single multiplier multiplying by one does not need to be performed by a multiplier, rather provide the value directly to the adder 130.

Therefore, it would have been obvious to one of ordinary skill in this art to obtain the invention as specified in the claim.

Regarding claim 17, Takatori further teaches wherein two of the multipliers 120 receiving output of 500, and 120 coupled to 140, as explained in regards to claim 16) respectively multiply two of the delay signals (output of N and N-1) by the two fixed parameters (output of 500 and unity or 1 for element N).

Regarding claim 18, Takatori further teaches wherein the two multipliers (explained above) utilizing the two fixed parameters are coupled adjacently (N and N-1 are adjacent).

### ***Allowable Subject Matter***

3. Claims 1-9 and 11-13 are allowed.
4. Claims 19 and 20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
5. The following is a statement of reasons for the indication of allowable subject matter: present application discloses a receiver comprising FFE, noise canceller, DAGC and a decoder. Prior art teaches all the combination of the elements. However, prior art does not explicitly teach the further limitation wherein the plurality of multipliers within the FFE having a center multiplier is multiplied with the fixed parameter.

***Conclusion***

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sam Ahn whose telephone number is (571) 272-3044. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on (571) 272-3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Art Unit: 2611

Phanhcong Tran

KHANH TRAN

Primary Examiner, AU 2611

Sam K. Ahn  
Patent Examiner

4/17/07